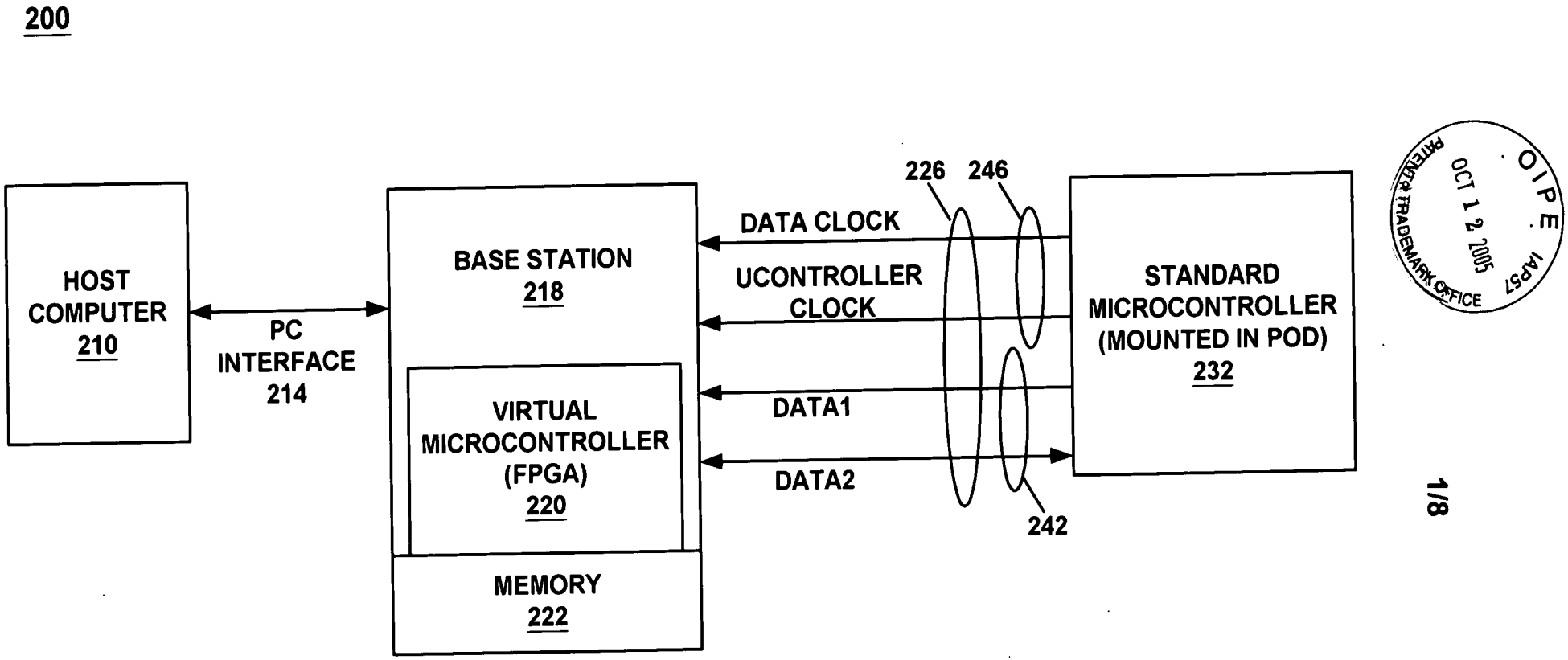

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FIGURE 1

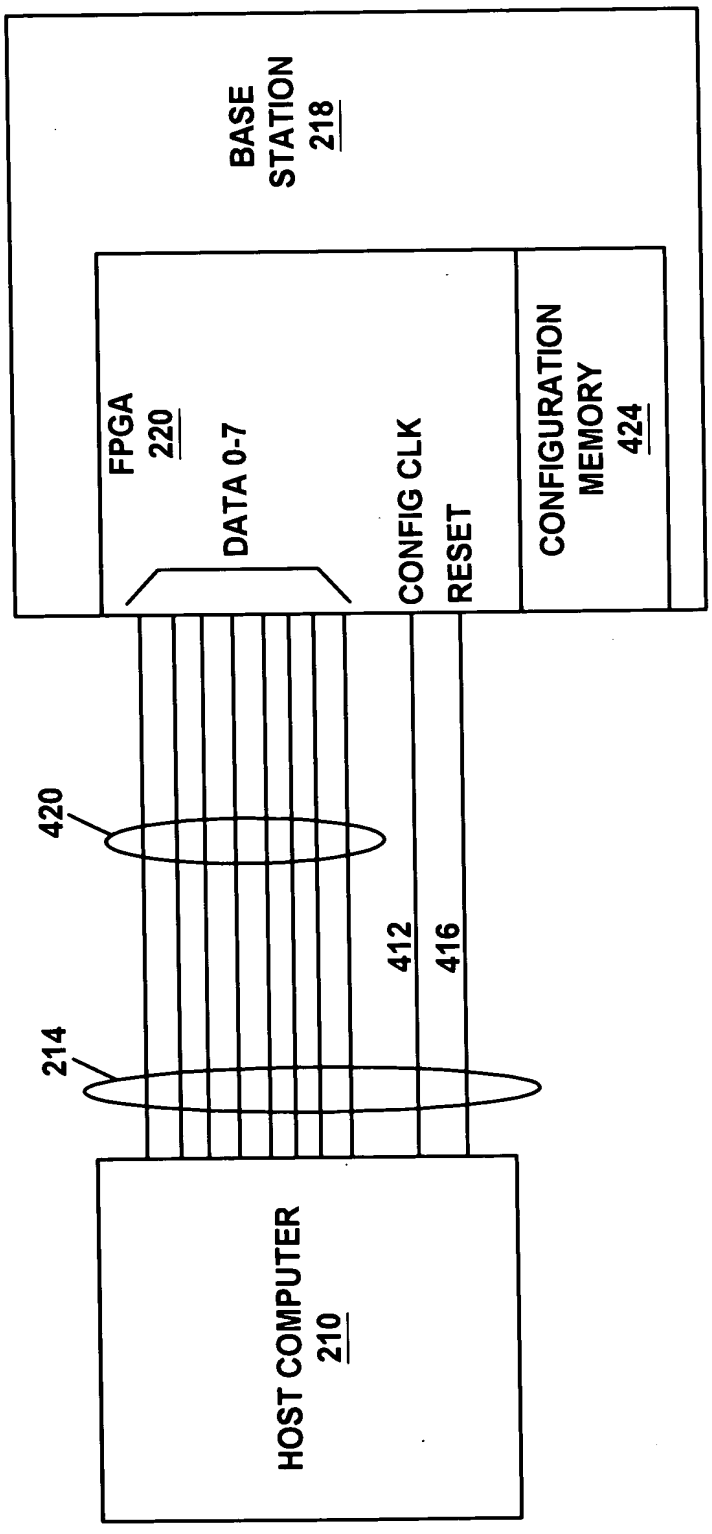
BASE STATION 218
FPGA 220
DATA 0-7
CONFIG CLK
RESET
CONFIGURATION MEMORY 424
420
214
412
416
HOST COMPUTER 210

FIGURE 2

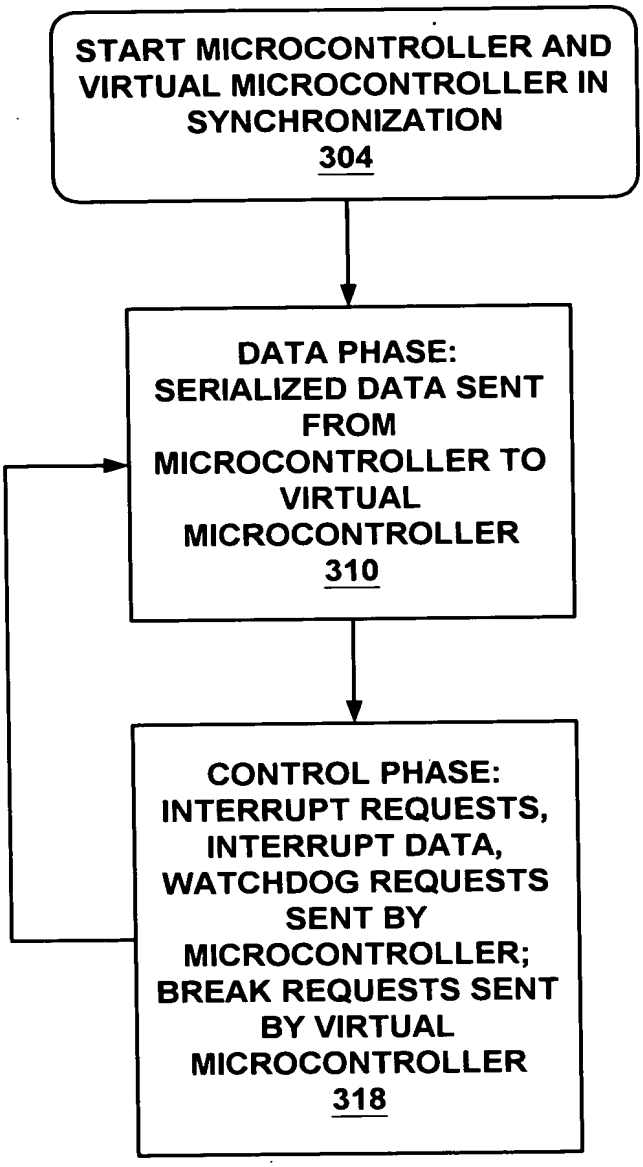
START MICROCONTROLLER AND VIRTUAL MICROCONTROLLER IN SYNCHRONIZATION
304
DATA PHASE: SERIALIZED DATA SENT FROM MICROCONTROLLER TO VIRTUAL MICROCONTROLLER
310
CONTROL PHASE: INTERRUPT REQUESTS, INTERRUPT DATA, WATCHDOG REQUESTS SENT BY MICROCONTROLLER; BREAK REQUESTS SENT BY VIRTUAL MICROCONTROLLER
318

FIGURE 3

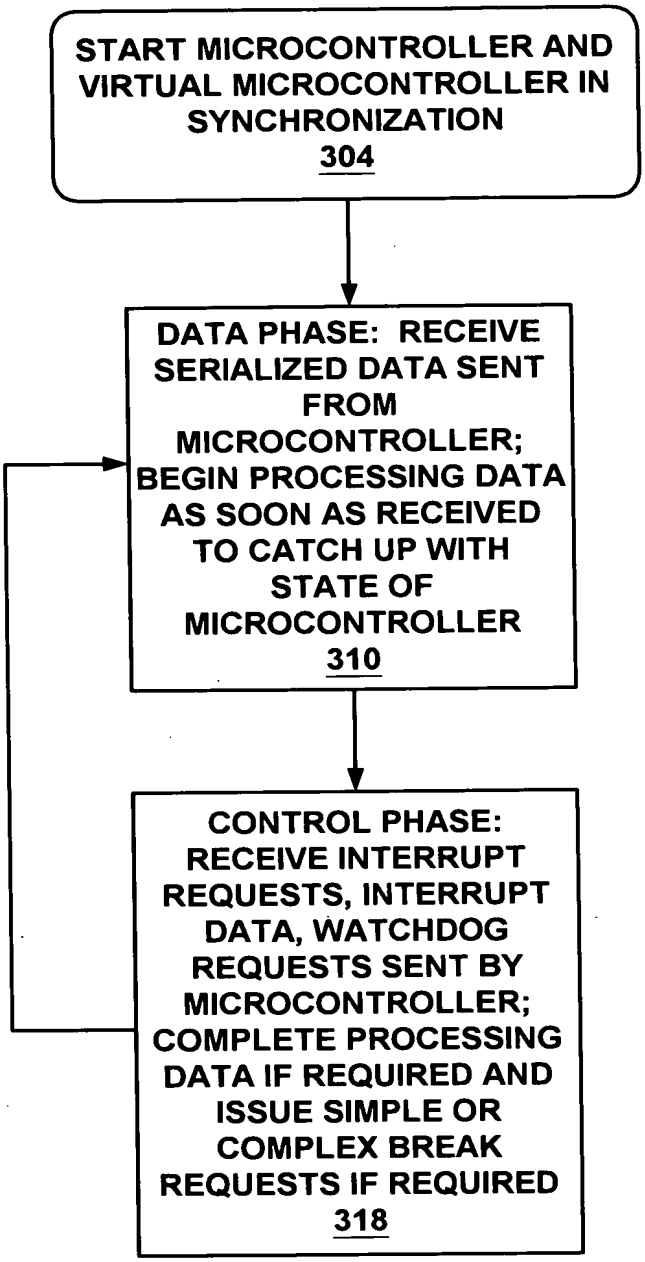
START MICROCONTROLLER AND VIRTUAL MICROCONTROLLER IN SYNCHRONIZATION
304
DATA PHASE: RECEIVE SERIALIZED DATA SENT FROM MICROCONTROLLER; BEGIN PROCESSING DATA AS SOON AS RECEIVED TO CATCH UP WITH STATE OF MICROCONTROLLER
310
CONTROL PHASE: RECEIVE INTERRUPT REQUESTS, INTERRUPT DATA, WATCHDOG REQUESTS SENT BY MICROCONTROLLER; COMPLETE PROCESSING DATA IF REQUIRED AND ISSUE SIMPLE OR COMPLEX BREAK REQUESTS IF REQUIRED
318

FIGURE 4

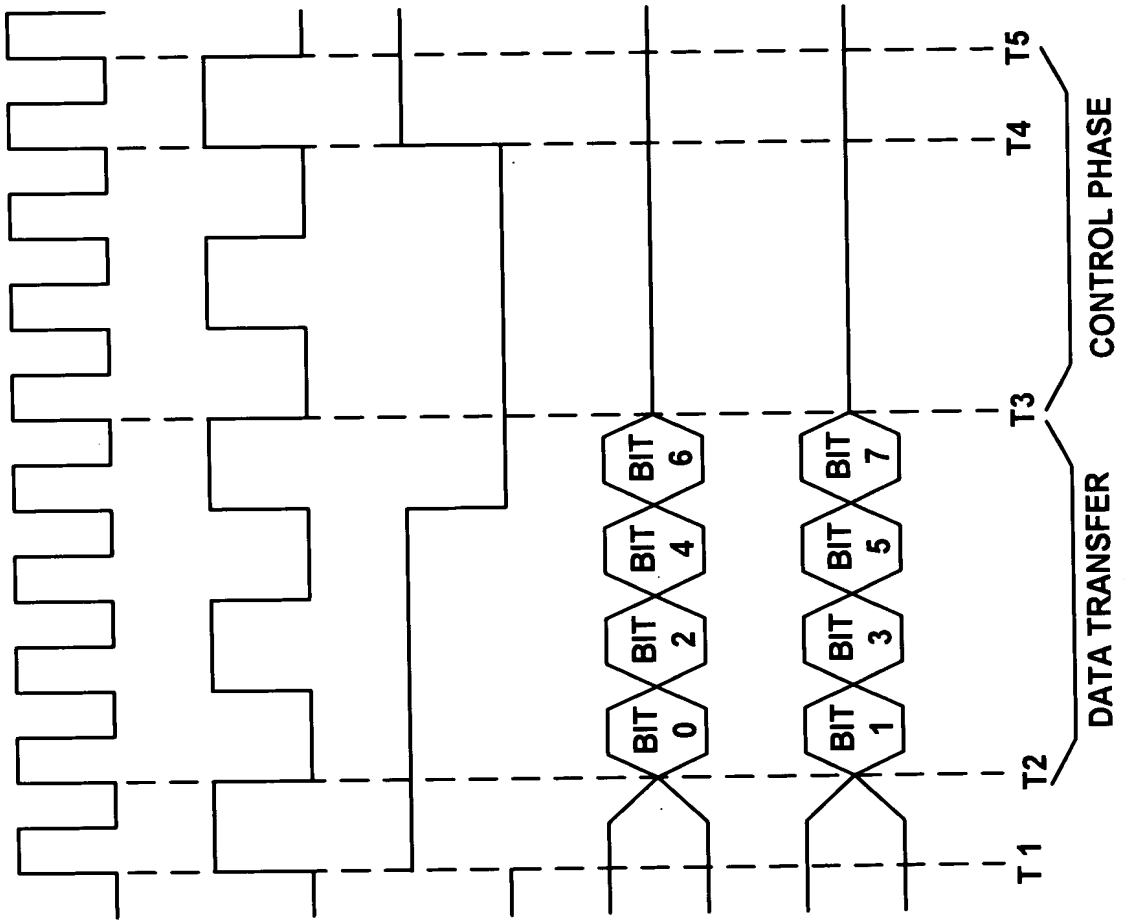
U_HCLK
(DATA CLOCK)
U_CCLK
(MICROCONTROLLER
CLOCK)
SOI
(REFERENCE)
U_DO_BRQ
(DATA2)
U_D1_IRQ
(DATA1)
BIT 0
BIT 2
BIT 4
BIT 6
BIT 1
BIT 3
BIT 5
BIT 7
T1
T2
T3
T4
T5
DATA TRANSFER
PHASE
CONTROL PHASE

FIGURE 5

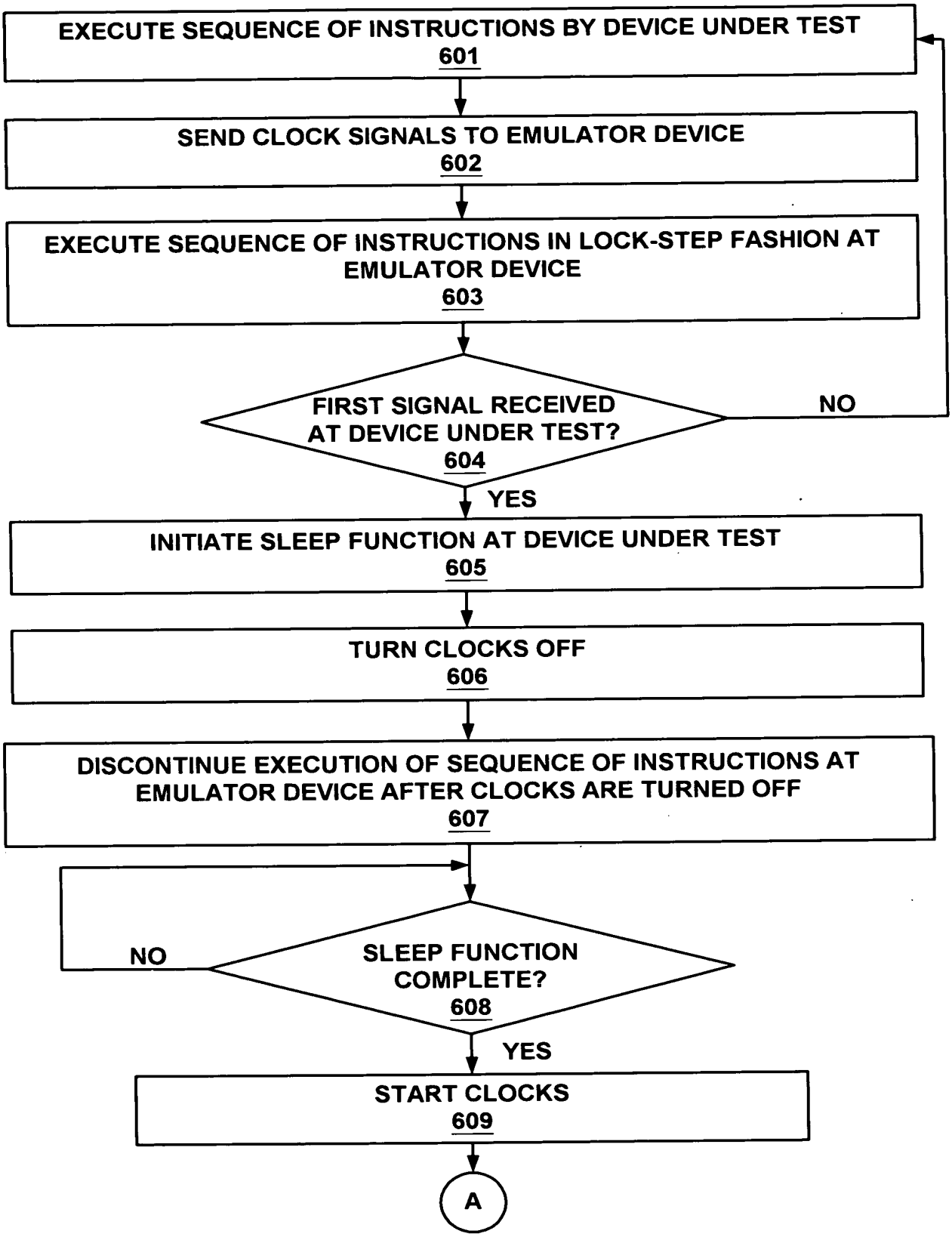
EXECUTE SEQUENCE OF INSTRUCTIONS BY DEVICE UNDER TEST
601
SEND CLOCK SIGNALS TO EMULATOR DEVICE
602
EXECUTE SEQUENCE OF INSTRUCTIONS IN LOCK-STEP FASHION AT EMULATOR DEVICE
603
FIRST SIGNAL RECEIVED AT DEVICE UNDER TEST?
604
NO
YES
INITIATE SLEEP FUNCTION AT DEVICE UNDER TEST
605
TURN CLOCKS OFF
606
DISCONTINUE EXECUTION OF SEQUENCE OF INSTRUCTIONS AT EMULATOR DEVICE AFTER CLOCKS ARE TURNED OFF
607
NO
SLEEP FUNCTION COMPLETE?
608
YES
START CLOCKS
609
A

FIGURE 6

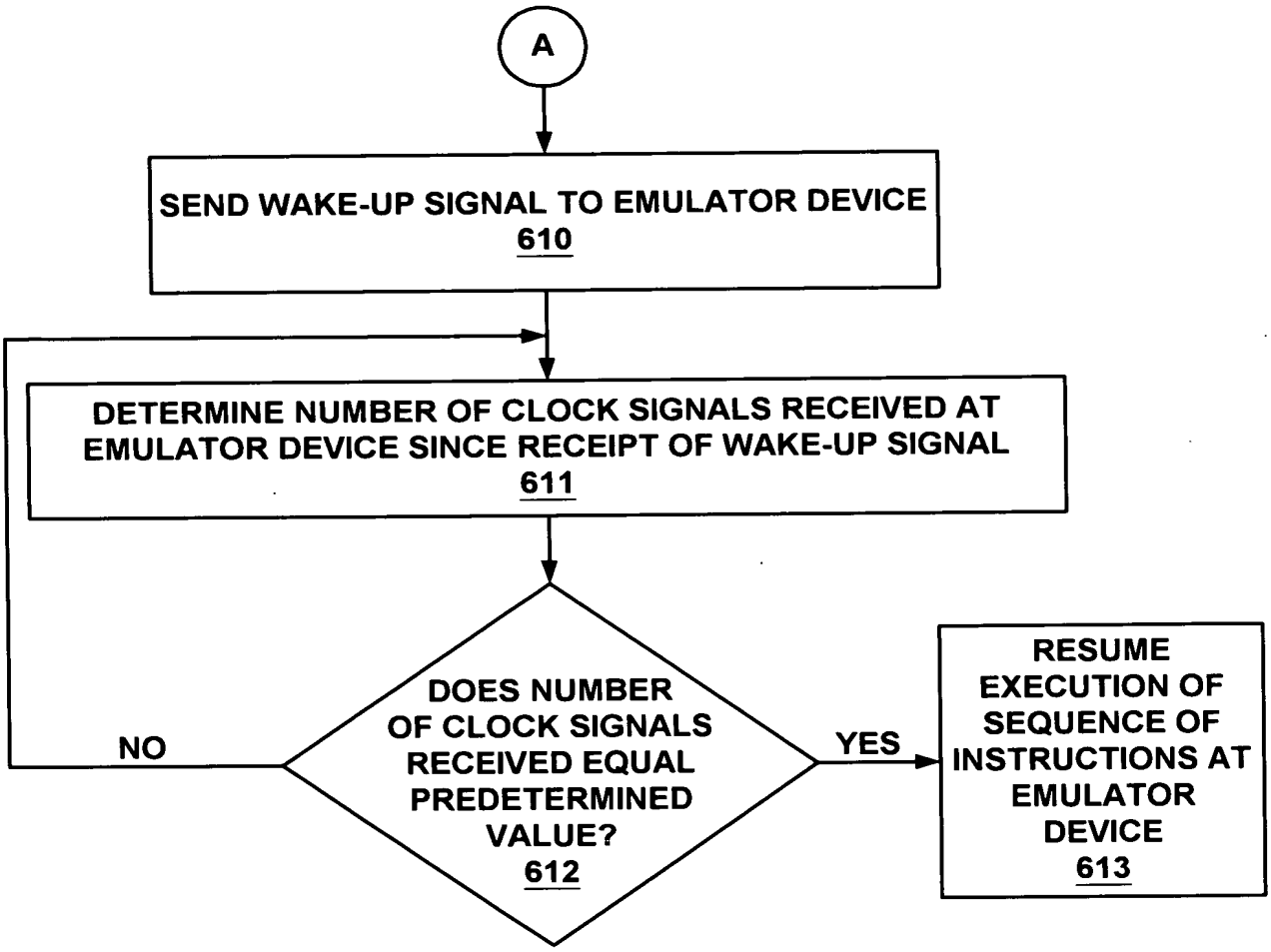

FIGURE 6 (CONT.)

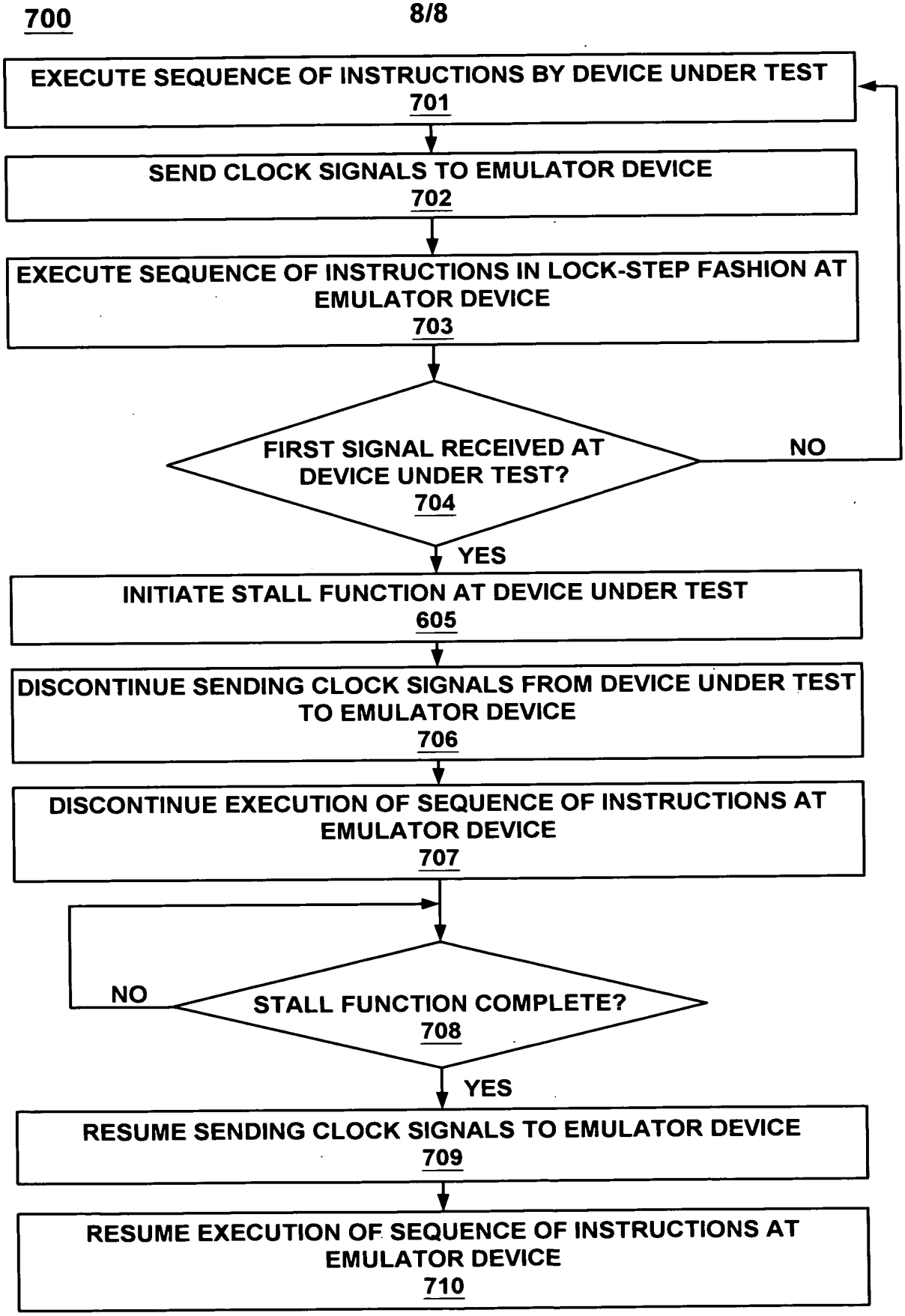
700
EXECUTE SEQUENCE OF INSTRUCTIONS BY DEVICE UNDER TEST
701
SEND CLOCK SIGNALS TO EMULATOR DEVICE
702
EXECUTE SEQUENCE OF INSTRUCTIONS IN LOCK-STEP FASHION AT EMULATOR DEVICE
703
FIRST SIGNAL RECEIVED AT DEVICE UNDER TEST?
704
NO
YES
INITIATE STALL FUNCTION AT DEVICE UNDER TEST
605
DISCONTINUE SENDING CLOCK SIGNALS FROM DEVICE UNDER TEST TO EMULATOR DEVICE
706
DISCONTINUE EXECUTION OF SEQUENCE OF INSTRUCTIONS AT EMULATOR DEVICE
707
NO
STALL FUNCTION COMPLETE?
708
YES
RESUME SENDING CLOCK SIGNALS TO EMULATOR DEVICE
709
RESUME EXECUTION OF SEQUENCE OF INSTRUCTIONS AT EMULATOR DEVICE
710

FIGURE 7